



1906.

QUEENSLAND.

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## ANNUAL REPORT OF THE COMMISSIONER OF PUBLIC HEALTH.

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Presented to both Houses of Parliament by Command.

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TO THE UNDER SECRETARY, HOME SECRETARY'S DEPARTMENT.

Department of Public Health, Queensland,

Brisbane, 21st August, 1906.

SIR,—I have the honour to present the Annual Report of my Department.

With the exceptions of diphtheria and typhoid fever, which still remain as prevalent as in former years, the year 1905 has been characterised by the slight degree in which infectious diseases have had incidence upon the population of the State.

As in former years, plague again made its reappearance in Brisbane during the year, but its manifestation in the Metropolitan Area was exceedingly limited, the number of cases in man and in rodents being the lowest on record since the introduction of the disease into Queensland in 1900.

No case of exotic disease has been reported during the year. Notwithstanding the comparative proximity of the State to the East and other principal endemic foci, Queensland has been singularly fortunate in its freedom from exotic diseases. The careful watch maintained at the "Gateway"—Thursday Island and other Northern ports—safeguards not only this State, but on more than one occasion has enabled timely warning to be given to neighbouring States of the Commonwealth.

Localised outbreaks of typhoid fever have occurred at St. George and at Charters Towers, and the sequence of attacks in both places seem to be connected by common circumstances. Special reports by the Inspectors to the Department have been prepared and forwarded to the local authorities concerned, together with the recommendations made by the Commissioner for a mitigation of the evil. The deplorable incidence of typhoid fever on adults at working ages cannot be too seriously brought home to the local authorities who are responsible for carrying out the provisions of the Health Act relating to infectious diseases.

The failure of medical practitioners to report cases of infectious disease, and the equally apathetic neglect of the local authorities to take efficient measures of disinfection, cleansing, &c., justify the Home Secretary's Department in enforcing the more drastic provisions of the Act.

From returns furnished by local authorities in compliance with a request contained in a circular addressed to them on 10th July last, relative to the prevention of infectious diseases, it would appear that, in many instances, the local governing body is content merely to record in its "Infectious Diseases Register" cases formally notified, and then to forward the Notification to the Commissioner for payment of the prescribed fee to the medical practitioner notifying the case—overlooking the fact that the notification is sent to the local governing body to ensure proper measures being taken by its officers, for the prevention of the spread of disease.

C. A. 54—1906.

The annual reports of the medical officers of health, too, in many cases, are disappointing. The mere recording of incidence and mortality of typhoid and other endemic diseases in the districts under their supervision affords no indication of the causes and circumstances of such outbreaks, or whether or not the methods employed by these officers in combating and eradicating endemic diseases, are as set forth in the Order issued in August, 1901, in pursuance of subsection 2 of section 29 of "*The Health Act of 1900*" ("Duties of Medical Officers of Health").

The sanitary history of the year under review should include a record alike of the proceedings of the medical officer of health himself and of the proceedings taken by the local authority under his direction or advice. In this connection the medical officer of health to a local authority is perhaps not altogether to blame. With practically no security of tenure, and inadequately compensated as to salary for the multifarious duties demanded of him, one is not surprised that the discharge of his public duties is more or less influenced by consideration of his private practice.

## INFECTIOUS DISEASES.

### NOTIFICATION.

The following are the cases of infectious diseases in respect of which formal certificates were received by the Department from medical practitioners throughout the State:—

Diseases.	1st July to 31st December, 1905.	1st January to 30th June, 1906.	Totals.
Diphtheria ... ..	118	139	257
Membranous Croup ... ..	...	4	4
Typhoid Fever ... ..	89	417	506
Erysipelas ... ..	23	19	42
Puerperal Fever ... ..	5	8	13
Continued Fever ... ..	...	...	...
Relapsing Fever ... ..	2	...	2
Phthisis ... ..	61	52	113
Scarlet Fever ... ..	16	6	22
Totals ... ..	314	645	959

The only deaths from Phthisis formally reported are as follow:—

1st July to 31st December, 1905 ... ..	59
1st January to 30th June, 1906 ... ..	23
Total ... ..	82

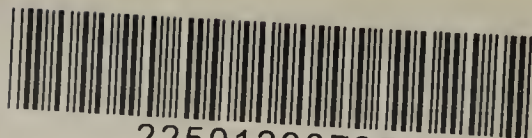
### METROPOLITAN AREA.

Distribution of cases formally and *otherwise* reported for the year ending 30th June, 1906:—

Local Authorities.	Typhoid Fever.	Scarlet Fever.	Puerperal Fever.	Diphtheria.	Erysipelas.	Phthisis.	Phthisis— Fatal.	Total.
Brisbane ... ..	96	3	2	49	15	69	...	234
South Brisbane ... ..	49	...	1	28	6	26	...	110
Ithaca ... ..	53	...	1	17	1	17	...	89
Windsor ... ..	14	1	...	13	2	8	...	38
Stephens ... ..	2	1	1	6	...	1	...	11
Sandgate ... ..	...	...	...	...	...	1	...	1
Balmoral ... ..	1	...	...	5	1	2	...	9
Belmont ... ..	...	1	...	2	...	1	...	4
Coorparoo ... ..	1	...	...	4	1	1	...	7
Enoggera ... ..	2	...	...	4	...	1	...	7
Hamilton ... ..	8	1	...	4	1	4	...	18
Sherwood ... ..	3	...	...	...	1	1	...	5
Taringa ... ..	2	...	...	5	2	3	...	12
Toombul ... ..	3	...	...	5	...	3	...	11
Toowong ... ..	9	1	...	7	...	8	...	25
Wynnum ... ..	1	...	...	3	...	1	...	5
Kedron ... ..	1	...	...	2	1	1	...	5
Indooroopilly ... ..	...	...	...	...	...	...	...	...
Yeerongpilly ... ..	2	...	...	1	...	...	...	3
Totals ... ..	247	8	5	155	31	*148	77	594

\*NOTE.—That this statement is at variance with the one immediately preceding it is due to the fact that the Notification clauses of the Act are not always observed.

Total number of premises disinfected, 588.



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## TYPHOID FEVER.

Five hundred and six cases of typhoid fever were notified in the State in 1906, as against 588 cases in 1905.

The notified attacks in the Metropolitan Area were 247, which, on the estimated mean population of the year, yielded an attack rate of 1.9 cases per 1,000 persons. Within the metropolis the greatest number of cases came from North and South Brisbane, Ithaca, and Windsor, districts, which, year after year, enjoy an unenviable notoriety in this connection.

Thirty-four cases were reported in the Balonne Shire, the principal town of which is St. George. As a result of the special investigation by the Department into the probable cause of the outbreak, all cesspits were ordered to be discontinued, and the double pan sanitary system installed within the town of St. George. It is gratifying to record that the local authority, on receipt of the special report prepared for its information, cordially conformed to the requirements of the Department.

The continued incidence of typhoid fever on the Town of Charters Towers, and the Shire of Queenton, pointed to the existence of some local infective factor requiring investigation. From the 23rd April, 1901, to 31st December, 1901, only 12 attacks were reported. For the year 1902, 54 cases were notified. During the year 1903, no less than 229 cases were reported. In 1904, the notifications totalled 45. In 1905, 60 cases were reported, while from the 1st January to 17th August, 1906, 54 attacks were notified, making a grand total of 454 reported cases in five years.

The conditions found on inspection of the area were highly unsatisfactory, the sanitary circumstances of both the Town and the Shire showing a want of local supervision and control. In his report, Mr. Simpson states: "There never has been any systematic rubbish removal. . . . In the corner of nearly every yard in the town there is a rubbish heap, in some cases amounting to several dray loads. . . . Loads of rubbish had been surreptitiously deposited in gullies to save carting to the depôt. Nearly every house in the shire has a cesspit varying from 3 feet to 9 feet in depth. I discovered numbers of premises without any sanitary conveniences whatever. . . . Large numbers of dilapidated conveniences built of saplings and old chaff bags were set over deep cesspits, many of which latter were full to overflowing. . . . In one case I found the domestic bath and waste waters, as well as part of the surface drainage of the yard, flowing into the closet cesspit, which in wet weather overflowed into an adjoining property."

## PHTHISIS.

The number of cases reported during the year in the Metropolitan Area was 148, as against 133 of last year. Seventy-seven deaths were reported. Two patients were sent to Dunwich, 37 to the Jubilee Sanatorium at Dalby, and 20 to the Diamantina Hospital for chronic diseases. The operation of compulsory notification continues to be entirely favourable. No case of friction has arisen in any instance during the 339 visits paid by Staff Nurse Perry. In February last a request to the superintendents of the Jubilee and Diamantina Hospitals, and to the Medical Superintendent, Dunwich Benevolent Asylum, to notify the Department of every consumptive patient admitted to these institutions, in order to allow of the necessary disinfection of premises vacated by the inmate, was readily complied with. Nurse Perry, in her report, dated 31st July, states: "I have visited during the year every case of tuberculosis notified to this Department as occurring within the Metropolitan Area, except a few cases where the practitioner in attendance preferred to personally undertake the supervision. The improvement in the surroundings of the patients after a visit or more has been paid is still noticeable, and every effort is made as far as possible to carry out the rules contained in the Leaflet and the instructions which I may give. The patients continue to welcome my visits, and are grateful for the interest displayed in their welfare. Several of them have, I regret, been careless in failing to notify their removal from one place to another, and it is only by constant supervision of these patients that I have been able to inform the Disinfecting Officer in order that the houses vacated by them should be disinfected. It is most essential that all houses or rooms occupied by persons suffering from consumption should be thoroughly disinfected before being used by any other person, and it is only by these means and the assistance of patients who carefully observe the rules made for their guidance that we are able to combat with the disease.

"As I reported last year, patients in their homes continue to use a receptacle containing some disinfectant, and those who are strong enough to go out of doors carry a flask, or use a paper bag or a piece of rag, which is afterwards burnt on their return home. If a handkerchief is used, this is placed in boiling water, or a solution of disinfectant, before allowed to dry. The patients are made to realise the danger of expectorating in the street. Several of the patients have been living on the veranda for the major portion of their time. There has not been one instance this year where I have been refused admission into the home of a consumptive patient."

## PLAGUE.

The incidence of bubonic plague on the Metropolitan Area from 1st July, 1905, to 30th June, 1906, was extremely slight, the number of human beings affected being only 8, of whom 4 died. No cases were reported until 6th March, 1906, and none after the 30th June, 1906. Seven of the reported cases were males (1 Chinaman), of whom 4 died, the single female patient surviving.

ELLCORE, J. W.	W. W. W.	W. W. W.	W. W. W.	W. W. W.
1906	1906	1906	1906	1906



The last case of plague in human beings in Brisbane in 1905 was reported on the 14th June. The last infected rat in 1905 was found on 23rd June.

The first case in man in 1906 was discovered on 6th March; the first plague-infected rat in 1906 on 12th January.

The monthly incidence of plague in the Metropolitan Area in man and rodents in the years 1905 and 1906 was—

										Man.		Rats.	
										1905.	1906.	1905.	1906.
January	...	...	...	...	...	...	...	...	...	4	...	5	1
February	...	...	...	...	...	...	...	...	...	16	...	59	6
March	...	...	...	...	...	...	...	...	...	2	1	48	6
April	...	...	...	...	...	...	...	...	...	1	4	3	3
May	...	...	...	...	...	...	...	...	...	2	1	7	5
June	...	...	...	...	...	...	...	...	...	3	2	5	6
Totals	...	...	...	...	...	...	...	...	...	28	8	127	27

Tho total number of rats and mice destroyed within the Metropolitan Area for the years 1905 and 1906, ended 30th June, is as follows :—

Year.							Number destroyed.	Number examined.	Number infected.	Percentage of infected rodents.
1905	...	...	...	...	...	...	34,889	19,880	194	0·98
1906	...	...	...	...	...	...	*25,649	14,622	29	0·19

\* The departmental rat destruction gang was reduced to ten men throughout tho year.

The monthly returns (Metropolitan Area) of rats and mice examined at the Bacteriological Institute for the years 1905 and 1906 are as follow :—

1905.				Rats examined.	Mice examined.	Infected.	1906.				Rats examined.	Mico examined.	Infected.
July	...	...	...	697	195	1	January	...	...	...	895	136	1
August	...	...	...	753	182	...	February	...	...	...	1,105	98	6
September	...	...	...	1,102	280	...	March	...	...	...	1,248	240	6
October	...	...	...	1,035	235	...	April	...	...	...	1,142	170	3
November	...	...	...	845	174	1	May	...	...	...	1,311	137	5
December	...	...	...	1,016	165	...	June	...	...	...	1,317	144	6
				5,448	1,231	2					7,618	925	27

Species of Infected Rats.

Mus rattus	...	...	...	...	...	...	...	...	19
Mus decumanus	...	...	...	...	...	...	...	...	9
Mus Alexandrinus	...	...	...	...	...	...	...	...	1
—									
Total	...	...	...	...	...	...	...	...	29

The plague season of 1905-6 in Brisbane has been the shortest on record, and there can be little doubt that the immunity from plague during this period, and still at present being enjoyed, is the outcome of the constant and systematic destruction of rats.

That rats play an important rôle in the spread of plague is now universally acknowledged by sanitary authorities throughout the world. In every place where plague has occurred special measures have been taken by the authorities both for the extermination of rats and precautions against their importation by ships.

While the propagation of an enormous number of rats must have been prevented by the efforts of the Department, it was impossible to do more than reduce the number considerably, for it has been ascertained that “a single female rat will produce at least five litters of rats, or an average of fifty rats, per annum.”

Tho number of rats destroyed could easily have been doubled had the Department had the assistance of the local governing bodies, individual householders, and occupiers of trade premises.

An amendment of the Health Act in the direction of the making of occupiers responsible for keeping their properties free from infestation with rats, as a preventive of plague, is urgently needed.



Though no cases of plague occurred in the Metropolitan Area until 6th March of this year, many "suspect" cases were investigated and negatived. One of these is worthy of remark. After an attack of what seemed influenza, the patient developed a large tense right femoral bubo with high fever and some delirium. The Health Officer to the Department diagnosed "filariasis," and a dead worm was found in the blood.

Departmental procedure did not differ from that of former years, except at two points—viz., the reduction of the rat-destroying gang, averaging twenty-seven men during the first half of the calendar year 1905, to twenty men for the second half of 1905, and ten men for the first half of 1906; and, secondly, in the destruction of rats by the employment of the virus of Danysz from 14th November, 1905. The virulence of the Danysz bacillus was exalted and constantly tested, a litre of virulent broth being prepared at the Bacteriological Institute twice a week. This was diluted by the Health Officer with sufficient fluid to soak some 800 baits, which were laid on the same day, but not twice in the same place. Few rats infected with the virus were caught or found dead, but the following tables, prepared by Dr. Woolrabe, suggest that large numbers of plague susceptible rats must have died:—

—	Average Number of Gang.	Rats and Mice Killed.	Rats and Mice Examined.	Rats and Mice Infected.
First half, 1905 ... ..	27	19,383	10,101	127
Second half, 1905 ... ..	20	11,993	6,679	2
First half, 1906 ... ..	10	13,656	7,943	27

That is to say, comparing the first halves of 1905 and 1906, though the ratio of caught to examined (1·9 in 1905, 1·7 in 1906) is almost equal, the number found infected in 1906 is twenty-seven, or almost one-fifth of that of 1905, while, *cæteris paribus*, it should be ninety-nine, or about four-fifths.

The monthly returns of rats and mice killed, examined, and infected were:—

—	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April.	May.	June.	Total.
Killed ... ..	1,648	1,798	2,252	2,220	1,885	2,180	2,850	1,982	2,640	2,250	2,504	2,840	25,649
Examined ... ..	892	935	1,382	1,270	1,019	1,181	1,031	1,203	1,488	1,312	1,448	1,461	14,622
Infected ... ..	1	...	...	...	1	...	1	6	6	3	5	6	27

On the 4th July, 1905, a fatal case of bubonic plague was reported from Ipswich. Forty-seven rats and three mice obtained from Ipswich were examined and found free from infection.

Two mild cases were reported from Cairns during July, 1905. One patient, a man residing some 4 miles from the town, was employed as a rat-catcher.

A fatal case of bubonic plague occurred at Townsville on the 4th August, 1905. The patient, a boy, lived in a coal hulk moored at the jetty wharf. Several plague-infected rats were discovered at this wharf.

During the month of September three further cases, one fatal, occurred at Townsville; and on the 15th October an aboriginal admitted to hospital died of plague on 21st idem. A further fatal case admitted to hospital on the 19th October died on the 21st of that month. In all, there were six cases and six deaths—a gross mortality of 100 per cent. Of 489 rats examined, five were found plague-infected.

After an absence of six years, plague in epidemic form reappeared in Rockhampton in April, 1906. Four cases of bubonic plague were reported during the week ending 12th April, 1906. All four cases came from the one warehouse situated in East street, Rockhampton. There is good reason to believe that the infection was imported by rats from vessels arriving at the town wharves.

Four further cases were reported during the week ending 21st April. All four cases were connected with the warehouse mentioned above. In all eight cases, with four deaths, occurred at this warehouse.

On the 23rd April the Commissioner of Health left for Rockhampton to inquire into the circumstances of the outbreak, and to personally conduct the operations instituted by the Department to stay the spread of the disease. It was ascertained that dead and diseased rats were found on the premises of the warehouse from which the cases were taken previous to and up to the date of the first case on 5th April. Dead rats were also found in a store adjacent to the warehouse, and eleven carcasses in a lane adjacent to this store.

Three sporadic cases occurred early in May, one patient being a rat-catcher employed by the Department. The last case was reported on 13th May. In all there were eleven cases and four deaths. Cleansing operations were vigorously pursued, and a gang of seven men were engaged in rat destruction at Rockhampton.



The total number of cases from 1st July, 1905, to 30th June, 1906, for the whole State was twenty-eight, of which fifteen terminated fatally—a gross mortality of 53·5 per cent. Deducting the cases of an aboriginal and a Chinese, both fatal, the corrected death rate for whites was 50 per cent. The place, incidence, and mortality were as follow :—

	IPSWICH.	CAIRNS.	TOWNSVILLE.	METROPOLITAN AREA.	ROCKHAMPTON.	TOTAL.
	4th July, 1905.	6th to 27th July.	4th August to 19th October, 1905.	6th March to 20th June, 1906.	13th April to 13th May, 1906.	
Cases ... ..	1	2	6	8	11	28
Deaths ... ..	1	...	6	4	4	15

The monthly incidence was as follows :—

	Cases.		Cases.
1905—July ... ..	3	1906—January ... ..	...
„ August ... ..	1	„ February ... ..	...
„ September ... ..	3	„ March ... ..	2
„ October ... ..	2	„ April ... ..	12
„ November ... ..	...	„ May ... ..	3
„ December ... ..	...	„ June ... ..	2
Males—Attacks ... ..	23	Female—Attacks ... ..	5
„ Deaths ... ..	13	„ Deaths ... ..	2

### LEPROSY.

Twenty-two cases of leprosy have been segregated, as compared with nineteen cases of last year.

TABULAR STATEMENT OF CASES OF LEPROSY RECORDED IN THE STATE OF QUEENSLAND FROM 1ST JULY, 1905, TO 30TH JUNE, 1906.

Initials.	Sex.	Age.	Race or Nationality.	Occupation.	Form or Type.	Assigned Place of Residence.	Date of Segregation.	Died.	Remain-ing.
1. M. ...	M.	23	Kanaka ...	Labourer ...	Nodular ...	Bundaberg ...	8-9-05	...	Yes
2. B. ...	M.	27	do ...	do ...	do ...	do ...	8-9-05	...	do
3. P. ...	M.	...	do ...	do ...	do ...	do ...	18-9-05	...	do
4. G. ...	M.	...	do ...	do ...	do ...	do ...	18-9-05	...	do
5. P. ...	M.	...	Aboriginal ...	...	do ...	do ...	18-9-05	...	do
6. A. ...	M.	50	Cingalese ...	Cook ...	do ...	Geraldton ...	5-10-05	...	do
7. A.C. ...	M.	15	Australian (Q.) ...	...	do ...	Croydon ...	5-10-05	...	do
8. L.Y. ...	M.	...	Chinese ...	...	do ...	Geraldton ...	7-10-05	...	do
9. C.M. ...	M.	38	Kanaka ...	Labourer ...	do ...	Bowen ...	10-11-05	...	do
10. D.M. ...	M.	...	do ...	do ...	do ...	Bundaberg ...	21-11-05	...	do
11. C. ...	M.	32	do ...	do ...	do ...	Mackay ...	1-12-05	...	do
12. L.L. ...	M.	40	do ...	do ...	do ...	Bundaberg ...	16-12-05	...	do
13. C.M. ...	M.	38	do ...	Farm labourer ...	do ...	Bowen ...	20-12-05	23-5-06	...
14. C. ...	M.	32	do ...	Labourer ...	do ...	Mackay ...	12-2-06	...	Yes
15. T.W. ...	M.	40	do ...	do ...	do ...	Ayr ...	1-3-06	5-3-06	...
16. AhG. ...	M.	35	Chinese ...	do ...	Mixed ...	do ...	19-1-06	...	Yes
17. J. ...	M.	35	Aboriginal ...	Station hand ...	Nodular ...	Cairns ...	12-1-06	...	do
18. A. ...	M.	50	Cingalese ...	Cook ...	Nerve ...	Johnstone River ...	12-1-06	...	do
19. L.T. ...	M.	40	Kanaka ...	Labourer ...	do ...	Cairns ...	12-1-06	...	do
20. E.T. ...	M.	61	Italian ...	Agricultural labourer ...	Mixed ...	do ...	12-1-06	...	do
21. A.C. ...	M.	15	Australian (Q.) ...	...	Nodular ...	Normanton ...	8-5-06	...	do
22. H.K. ...	M.	45	German ...	Labourer ...	Mixed ...	Inmate of General Hospital, Brisbane	8-5-06	...	do

### DISINFECTANTS.

In my last Annual Report a list of disinfectants analysed by the Government Analyst was published. It was then stated that chemical analysis was not found to be a reliable means of ascertaining the value of a disinfectant, and that what was needed was the absolute *germicidal* rather than the actual *chemical* value of a disinfectant. There appears to be a somewhat prevalent idea that the words antiseptic and deodorant are synonymous with disinfectant. “This fallacy is soon revealed when it is stated that the utmost that is expected of a preparation of an antiseptic nature is that it should inhibit or retard the growth of micro-organisms.” The word “germicide”—a killer of germs—aptly expresses what the function of a true disinfectant should be.

A valuable report on the result of a large number of experiments conducted by Mr. C. J. Pound, the Government Bacteriologist, at my request, to determine the germicidal value and carbolic co-efficient of several disinfectants retailed in Brisbane, has been prepared and I regret that space forbids the publication of this interesting report *in extenso*. I trust, as the report in question contains much valuable information to Government institutions and local authorities, to obtain the Minister's authority to print it for circulation.

## BACTERIOLOGICAL INSTITUTE.

In addition to the general routine work of the Institute, I am pleased to record that a number of original investigations and some research work have been undertaken during the past year.

If any doubt exists as to the valuable services which the Bacteriological Institute is rendering to the State Department of Public Health, to the medical profession, and to the public generally, it ought to be speedily dissipated upon the perusal of the annual report furnished me by the Government Bacteriologist and appearing in Appendix B hereto.

## RETURN SHOWING PARTICULARS OF SPECIMENS EXAMINED DURING THE YEAR ENDING 30TH JUNE, 1906.

Disease.	Specimen.	Positive.	Negative.	TOTAL.		Total.
				Positive.	Negative.	
Plague ... ..	Rats ... ..	38	13,293	49	15,630	15,679
	Mice ... ..	...	2,308			
	Lymph (human) ... ..	9	21			
	Sputum " ... ..	...	2			
	Viscera " ... ..	2	5			
	Spleen and gland from guinea pig ... ..	...	1			
Tuberculosis ... ..	Sputum (human) ... ..	160	299	165	320	485
	Urine " ... ..	3	5			
	Pus " ... ..	...	6			
	Milk from cow ... ..	...	3			
	Virus from pleuro beast ... ..	...	4			
	Pleuritic fluid (human) ... ..	...	2			
	Lung and lymphatic gland from cow ... ..	1	...			
	Saliva from cow ... ..	...	1			
	Pus from cow ... ..	1	...			
Typhoid ... ..	Blood ... ..	194	285	194	285	479
	...	...	...			
Diphtheria ... ..	Throat swabbings ... ..	64	133	65	134	199
	Nasal swabbings ... ..	1	...			
	Pus from ear ... ..	...	1			
Leprosy ... ..	Serum ... ..	16	6	17	7	24
	Tissue and smear from nodule ... ..	...	1			
	Mucus ... ..	1	...			
Gonorrhœa ... ..	Urine ... ..	...	4	3	7	10
	Vaginal discharge ... ..	1	1			
	Pus (urethral) ... ..	1	2			
Pneumonia ... ..	Pus from abscess ... ..	...	1	...	3	3
	Serum ... ..	...	2			
Pathological tissues ... ..	Human ... ..	...	...	...	...	93
	Animal ... ..	...	...			
Empyema ... ..	Pus ... ..	...	2	...	2	2
Endocarditis ... ..	Blood ... ..	...	1	...	1	1
Tick fever ... ..	Blood from beast ... ..	...	1	...	1	...
	Urine from beast ... ..	...	1			
Actinomycosis ... ..	Viscera from beast ... ..	1	...	...	...	3
	Pus and tissue from beast ... ..	2	...			
Pseudo-tuberculosis ... ..	Intestine of ewe ... ..	1	...	...	...	1
Filaria ... ..	Blood ... ..	2	...	...	...	2
Abscess ... ..	Pus ... ..	1	...	...	...	1
Animal parasites ... ..	Sclerostoma from intestine ... ..	1	...	...	1	...
	Ticks ... ..	...	1			
Streptococci ... ..	Sero-pus (human) ... ..	2	...	...	1	3
	Agar culture ... ..	...	1			
Anthrax ... ..	Calf's ear ... ..	...	1	...	1	1
Hydatids ... ..	Cyst from Bullock's kidney ... ..	...	1	...	1	...
	Fluid from lungs ... ..	...	1			
Ptomaines ... ..	Swab from pickling tub ... ..	...	...	...	...	3
	Salting brine ... ..	...	...			
	Tin of salmon ... ..	...	...			
	Cured pickle ... ..	...	...			
Miscellaneous ... ..	Meat tub ... ..	...	...	...	...	30
	Water ... ..	...	...			
	Milk ... ..	...	...			
	Urine ... ..	...	...			
	Disinfectant for poisons ... ..	...	...			
	Pus ... ..	...	...			
	Material from mutton chop ... ..	...	...			
	Liquid from lung of beast ... ..	...	...			
	Blood from sheep ... ..	...	...			
	Sputum for pus and cocci ... ..	...	...			
	Fluid from wound in abdomen ... ..	...	...			
	Knife for blood ... ..	...	1			
	...	...	...			
	...	...	...			
	...	...	...			
Grand Total ... ..		...	...	...	...	17,062



TABLE SHOWING PARTICULARS OF RATS AND MICE (COVER GLASS SMEARS INCLUDED) RECEIVED FROM THE VARIOUS COUNTRY TOWNS DURING 1905-6.

Name of Town.							NUMBER OF RATS.		NUMBER OF MICE.	
							Received.	Infected.	Received.	Infected.
Ipswich	...	...	...	...	...	...	624	...	95	...
Bundaberg	...	...	...	...	...	...	209	1	16	...
Maryborough	...	...	...	...	...	...	143	7	...	...
Gladstone	...	...	...	...	...	...	131	...	7	...
Rockhampton	...	...	...	...	...	...	1	...	...	...
Townsville	...	...	...	...	...	...	2	1	...	...
Howard	...	...	...	...	...	...	34	...	13	...
Thursday Island	...	...	...	...	...	...	1	1	...	...
Totals	...	...	...	...	...	...	1,145	10	131	...

TABLE SHOWING AMOUNT OF MONEY COLLECTED FROM THE DIFFERENT SOURCES AT THE BACTERIOLOGICAL INSTITUTH DURING THE YEAR 1905-1906.

Month.							Examination Fees.	Virus.	Tuberculin.	Total.
1905.							£ s. d.	£ s. d.	£ s. d.	£ s. d.
July	...	...	...	...	...	...	6 0 0	...	...	6 0 0
August	...	...	...	...	...	...	3 10 0	...	...	3 10 0
September	...	...	...	...	...	...	2 5 0	3 1 6	...	5 6 6
October	...	...	...	...	...	...	3 15 0	4 11 0	...	8 6 0
November	...	...	...	...	...	...	4 5 0	5 9 0	...	9 14 0
December	...	...	...	...	...	...	2 15 0	4 8 11	...	7 3 11
1906.										
January	...	...	...	...	...	...	3 0 0	1 4 0	0 0 6	4 4 6
February	...	...	...	...	...	...	2 5 0	...	...	...
March	...	...	...	...	...	...	17 5 0	...	...	...
April	...	...	...	...	...	...	1 15 0	...	0 2 0	1 17 0
May	...	...	...	...	...	...	1 0 0	10 19 6	...	11 19 6
June	...	...	...	...	...	...	1 10 0	5 7 0	...	6 17 0
Grand Total	...	...	...	...	...	...	£49 5 0	£35 0 11	£0 2 6	£84 8 5

FOOD.

I am pleased to state that the Government Analyst, Mr. J. Brownlie Henderson, has been lately attached as an officer of my sub-department, the administration of the Government Chemical Laboratory having been transferred from the Mines Department to the Home Secretary's Department. This arrangement will enable me the more easily to carry out the investigations required by the food sections of the Health Statute, and it will also allow of Mr. Henderson occupying his time more fully with matters directly pertaining to the public health.

Before any legal action can be taken in accordance with the provisions of the Health Act, it is, of course, necessary to examine the foodstuffs suspected, and as the local-governing bodies still display apathy with regard to the appointment of qualified analysts, and the execution of the food sections of the Act generally, the bulk of the work of inspection, collection of samples, examination, and prosecution falls on my Department. With the small numerical staff at my disposal, it is impossible at the present time to keep in touch with places outside the metropolis. Mr. Gabriel, of the Inland Revenue Department, has been appointed an officer under the Health Act to procure and collect samples of foodstuffs on my behalf, and he and his officers have done much valuable work for the Department in this connection.

A second medical officer to the Department is urgently required. As occasion offered, this officer could visit the Northern towns of the State, report upon the sanitary circumstances of the area of each local authority, and obtain samples of foodstuffs for examination in Brisbane. By this means I could be kept informed, as far as practicable, of all influences affecting, or threatening to affect, injuriously the public health of the State. Such a state of affairs as revealed by the Chief Inspector's Report on the Charters Towers district would then hardly be possible. A periodical account of the general sanitary state of the Northern Areas, and inspection of foodstuffs exposed for sale in their local markets, would indicate direction for further consideration and action. With regard to the Metropolitan Area, the work of inspection and examination of foodstuffs by the officers of the Department continues to be conducted in a steady and unostentatious manner. All the bakers' and butchers' premises have been inspected, and there is a marked improvement noticeable in these establishments since last year. The majority of the butchers have met the wishes of the Department with regard to the use of pickling needles, and in only a few isolated instances were brass needles found.

Some 5 tons of foodstuffs have been seized, condemned as unfit for human consumption, and destroyed during the year.



The arrangement made with the Grocers' Association works satisfactorily. Goods to which the Department takes exception from time to time are withdrawn voluntarily from the market within a short period of notification to the Secretary of the Association. All stocks on the local market are returned by the vendors to the manufacturer, or local agent, who is proceeded against, if necessary, by the Department. In many cases the officers of the Department have seized and destroyed the whole of the stocks exposed for sale. In this way the market is kept clear of suspected articles, and the most culpable person or persons punished. It may be argued that this method allows of "dumping" on other parts of the State not so protected, but the same argument would apply in the case of prosecution of any one or particular vendor, as there is nothing to prevent an unscrupulous southern manufacturer shipping banned goods direct to Northern places where no provision has been made by the local or by the State authorities for the inspection of foodstuffs.

If upon analysis or examination the suspected foodstuff is found to be unfit for the food of man, such consignment, in the case of imported goods, may be destroyed by my Order. In the majority of cases, however, as, *e.g.*, cream of tartar, it more frequently happens that while no substance can be discovered as to affect injuriously the quality, substance, or nature of the food in question, it yet fails to come up to the standard required by the regulation, and in this case delivery is refused to the consignee.

On the whole, the large bulk of foodstuffs manufactured and retailed in Brisbane are free from adulteration. What is really needed is inspection and examination at the port of entry—namely, the Customs—before delivery of imported goods to the consignee, and it is to be hoped that the Federal authorities will be enabled to take some action in this connection under the Commerce Act and Regulations.

An attempt was made early in the year in certain quarters to upset the standard fixed by regulation under the Health Act of 3 per cent. of fatty solids (milk fats) in fresh milk. This percentage is in reality much smaller than the average quantity of fat present in the milk supplies of Brisbane. Occasionally it will happen that one cow in a herd produces milk which is below the standard of 3 per cent., and this fact is pressed in an emphatic manner upon the magistrate before whom a case may be tried. It may be pointed out, however, that the public are supplied with milk from a herd of cows and not, as a rule, from one cow. A system of recording is being conducted with the object of ascertaining, as exactly as possible, how rich the milk produced upon metropolitan farms actually is. The results, so far, indicate that milk produced from herds is much above the standard of 3 per cent. required by the regulation. The Board of Health, of the State of Victoria, on the recommendation of the Food Standards Committee, appointed under the new Pure Foods Act, has defined milk to be "the normal secretion of the healthy udder of the cow," and the standard for milk has been fixed, by the Victorian Board at not less than 3·3 per cent. of milk fats, and not less than 8·5 per cent. of solids not fat.

Much correspondence has taken place of late between a certain concentrated milk company in one of the southern States and myself, relative to the standard under the Queensland Health Act for condensed (sweetened) milk. It is maintained that the regulation made by me in 1903—namely, "Condensed milk, or concentrated milk, shall contain not less than 10 per cent. butter fat"—is unworkable, and that the regulation in question should be amended to the effect "that sweetened condensed milk shall contain not less than 8·5 per cent. of butter fat, and unsweetened condensed milk not less than 8 per cent. of butter fat." Representation by southern manufacturers has also been made to the Department of Agriculture, and to the Chief Secretary's Department, for the amendment of the Queensland regulation as above suggested. In reply, it was pointed out that samples of condensed (sweetened) milk, made by the local manufacturers and tested here, have constantly given over 12 per cent. of butter fat. That several samples of one local company gave close on 15 per cent., and as Queensland was now getting a good supply of pure condensed milk, free from preservatives, containing over 10 per cent. butter fat, I quite failed to see why the standard should be lowered to 8·5 butter fat. That if the interests of the children of Queensland, many of whom in the Northern and Western parts of the State depended largely on condensed milk, in lieu of fresh milk, were to come before those of manufacturers, then the standard should be raised and not lowered. That the maintaining of our standard in no way interfered with the supply, and did not subject local manufacturers, already working to the standard of 10 per cent., to any hardship. As, however, it has been maintained that the standard of 10 per cent. butter fat, under the regulation of the Queensland Health Act, is at variance with the standard fixed by a regulation made under the Dairy Produce Act of Queensland, and with many other statutes of several States of the Commonwealth, I beg to quote the following replies I have received from the heads of the Public Health Departments of other States in answer to my circular letter of 12th May, 1906, relative to the standard of condensed milk.

1. From the President of the Central Board of Health, Perth, Western Australia: "In reply to your letter I may state that when the new Public Health Act comes into force, we shall certainly prohibit any with less than 10 per cent. of fat."
2. The Secretary, Department of Public Health, Hobart, Tasmania: "The standard required in this State for butter fat in condensed or concentrated milk is 10 per cent."  
(Copy of Regulation dated 29th February, 1904, enclosed.)



3. The Secretary, Department of Public Health, New South Wales: "I have the honour, by direction, to enclose for the information of the Commissioner, copy of a return prepared by the Government Analyst, showing percentage of fat in condensed milks, unsweetened and sweetened. . . . It would appear, from the list of analyses enclosed, that there is not any difficulty in maintaining a standard of 10 per cent. if desired."
4. The standard fixed by the Board of Health of the State of Victoria, on the recommendation of the Foods Standards Committee, is as follows:—"Condensed or concentrated milk preserved by heat alone and protected from contamination, or preserved by heat and the addition of sugar, shall contain not less than 32 per cent. of total milk solids and not less than 10 per cent. of fatty solids (milk fats)."

Thus the health authorities of New South Wales, Victoria, Queensland, Western Australia, and Tasmania are in favour of the 10 per cent. standard.

On 9th June, Mr. Henderson, Government Analyst, reported:—"At present we have a good supply of milks over 10 per cent. butter fat. Representatives of two local manufacturers have interviewed me on this question, and each has requested that the standard be kept at 10 per cent. The agent for one of the largest importers of condensed milk also requested that the standard be kept up to 10 per cent."

The fines inflicted for adulteration of foods under the Health Act during the past year amounted to £72 5s.

#### THE HYGIENIC COURT.

When I took up my duties as Commissioner of Public Health, in January, 1901, I formulated several schemes for "popularising" the science of sanitation. An essential factor to success in the administration of a new and somewhat arbitrary Health Statute is that the community should be in a position to understand and appreciate what is being done for its benefit, as a whole and individually. It was understood that it would be difficult to administer sanitary measures unless the public was willing to accept them and co-operate in their practical application. To educate and advise, to persuade and teach, rather than to compel, was thought to be the true position of the sanitarian. With this object in view, many popular lectures, illustrated by lantern pictures, have been given in various centres of the State, the lectures being attended in every instance by large and interested audiences.

The Hygienic Court at the recent National Show was but a practical demonstration, on a small scale, of what may be done to illustrate the growing popularity of the subject of hygiene and its bearing upon the practical wellbeing of the community, the individual, and the home.

It was a means adopted to teach the public, by an interesting and attractive object lesson, the elementary principles of sanitary science and hygiene. It is with great pleasure that the Department learns from the public Press that "the Hygienic Court was one of the most interesting displays in the pavilion, and its value, from an educational standpoint, was almost incalculable." It is also gratifying to know that the exhibits were "full of interest, not only to the scientist and the medical expert, but also to the public."—I am, &c.,

B. BURNETT HAM, M.D., D.P.H. (Camb.),  
Commissioner of Public Health.



## APPENDIX A.

## REPORT OF THE CHIEF INSPECTOR.

Department of Public Health, Queensland,  
Brisbane, 23rd August, 1906.

SIR,—I have the honour herewith to submit my annual report of the work accomplished for the financial year ending 30th June, 1906.

I would again respectfully draw your attention to the need for an increase in the number of my assistants, as the work of the Department is increasing year by year.

## METROPOLITAN AREA.

Within the Metropolitan Area 1,101 inspections have been made. The sanitary state of the district is improving. Some of the local authorities have not yet installed rubbish removal systems, even though their areas are in parts thickly populated. The continued discharge of household slop and waste water into unformed water tables is largely on the increase. The condition of these channels is a standing disgrace to the local authorities concerned, as well as a grievous menace to the health of the community.

## SPECIAL INSPECTIONS.

All the ice-cream shops and their premises were inspected and found in a clean condition. Numbers of the shops where this commodity was formerly on sale have ceased to make or sell ice cream. A large number of the pickle and jam factories have also been inspected. Dr. Bancroft and Inspector Daniel made a systematic inspection of the licensed victuallers' premises, and in the majority of instances found their premises in a satisfactory condition. Acting under your instructions, I have made an inspection of all the tanneries, fellmongeries, wool scours, and glue piece factors' premises on the watershed of the Kedron Brook, but, owing to pressure of other work, have been unable to furnish a report thereon.

## BAKERS' AND BUTCHERS' SHOPS.

All the bakers' and butchers' premises have been inspected. There is a marked improvement on the baking establishments since last year. In only a few isolated cases have butchers been found using brass-plated brine needles. The wholesale houses stocking butchers' sundries have met the wishes of the Commissioner of Public Health, and agreed to sell only needles manufactured from pure commercial nickel. Some of the brass brine pumps are kept in a dirty condition. The necessity for reform in this direction has not been lost sight of, and arrangements have been made by the abovementioned warehousemen, at the suggestion of the Commissioner of Public Health, for a supply of white metal pumps which are expected to gradually displace the brass ones. Some pumps have been in use for years, and have given entire satisfaction. Contamination of butcher meat by verdigris will thus be reduced to a minimum.

## INTIMATION OF NUISANCES.

Eighty-six intimations of nuisance have been forwarded to various local authorities, drawing their attention to nuisances within their areas that require abatement. The local authorities and the number of notices forwarded are as follow :—

Shire of Allora	...	...	...	...	...	...	...	...	10
City of Brisbane	...	...	...	...	...	...	...	...	37
City of South Brisbane	...	...	...	...	...	...	...	...	5
Shire of Balmoral	...	...	...	...	...	...	...	...	1
Shire of Clifton	...	...	...	...	...	...	...	...	11
Shire of Goolman	...	...	...	...	...	...	...	...	2
City of Ipswich	...	...	...	...	...	...	...	...	...
Town of Ithaca	...	...	...	...	...	...	...	...	13
Shire of Stephens	...	...	...	...	...	...	...	...	1
Town of Toowong	...	...	...	...	...	...	...	...	1
Shire of Toombul	...	...	...	...	...	...	...	...	1
Shire of Taringa	...	...	...	...	...	...	...	...	1
Town of Windsor	...	...	...	...	...	...	...	...	2
Total	...	...	...	...	...	...	...	...	86

## COMPLAINTS.

Twenty-two complaints in writing have been referred to me during the year, and, when there has been just cause for complaint, action has been taken to abate the nuisances complained of.

## FOOD INSPECTION.

Owing to the smallness of my staff, I have been unable to pay as close attention to this part of my duties as I should have liked. Nevertheless, a large number of samples of flavouring essences, condensed milk, jams, spirits, &c., have been purchased and submitted to Mr. Brownlie Henderson, Government Analyst, for examination and report.



The city wharves, auction rooms, shops, and markets have, as far as possible, been under the supervision of officers of the Department. Five tons 16 cwt. of foodstuffs have been seized and condemned as unfit for human consumption, and disposed of, without additional cost to the Department.

#### BUBONIC PLAGUE.

There was a recrudescence of plague early in the month of March, and prompt measures were taken to prevent its spread. Eight cases have occurred during the year. The outbreak has not been confined to the city, several cases occurring several miles out of town. The rat gang continued active operations throughout the year, and destroyed 25,649 rodents; 29 of these proved to be plague-infected.

#### SHIPPING REGULATIONS.

Concurrently with the work of plague prevention the shipping regulations have been enforced, and all vessels trading with Victorian ports have been fumigated at their Queensland terminal port. Three hundred and ninety berthing and forty-one fumigation certificates have been issued to vessels during the year.

#### SANITARY DISINFECTION AND INFECTIOUS DISEASE.

Five hundred and ninety-four cases of infectious disease have occurred within the Metropolitan Area during the fiscal year. The premises where 588 of these occurred have been fumigated, sanitary defects noted, and the local authorities notified. Nine hundred and twenty gallons of miscible carbolic have been manufactured by officers of the Department. Of this quantity, 440 gallons have been used by the Health Department, 123 gallons sent to provincial health officers, and 357 gallons have been supplied to other Departments through the Government Storekeeper.

Two hundred and eighty thousand rat poison baits have also been made, including 20,000 Danysz virus baits. The cities of North and South Brisbane, the wharves, river banks, and retaining walls have been systematically baited with good results. In places where rats are known to congregate in outside areas, baits have also been laid. Two hundred and fifty packets of poison baits have also been supplied free of charge to persons complaining of the presence of rats upon their premises.

I would here draw special attention to the high mortality in child life within the parish of Enoggera, which embraces the towns of Ithaca and Windsor and also the shire of Enoggera, and also to the large number of infectious diseases occurring in the towns of Ithaca compared with the rest of the Metropolitan Area. Eighty-nine cases of infectious disease have been notified to the Health Department as having occurred within the town of Ithaca; fifty-three of these were typhoid fever, and seventeen cases of diphtheria, seventeen of phthisis, and one each of erysipelas and puerperal fever. Thirty-eight cases in all were reported from the town of Windsor of the following diseases:—Typhoid fever, fourteen; diphtheria, thirteen; phthisis, eight; erysipelas, two; and one case of scarlet fever. Seven cases of notifiable disease have also occurred within the Enoggera Shire Council's Area—namely, two of typhoid, four diphtheria, and one of phthisis. Most of these cases are purely filth diseases, and therefore preventable, and due to the want of adequate removal systems for trade and household garbage within the two towns named; to the insanitary condition of many thoroughfares where drainage is discharged into unformed water tables, as well as improper and defective drainage and sanitary conditions generally, I attribute the large amount of sickness in the towns mentioned. The shire of Enoggera, being to some extent an agricultural district, the insanitary conditions would not be so acute as they are in the more thickly populated suburban areas.

The following table shows the infant mortality, within the registry district of Enoggera, of children under two and under five years of age:—

—	Total Number of Deaths in District of all Ages.	Census 1901—Centesimal Ratio of Children under Two Years to Population of District.	Number of Deaths in District.	Proportion Per Cent. to Total Deaths in District.
Children under two years of age...	193	5·49	73	37·82
Children under five years of age...	193	13·40	79	40·93

The second column shows the proportion per cent. of children under two and five years of age to the total population. Column four shows the proportion of deaths of children under two and five years of age respectively to the total number of deaths within the district of Enoggera as shown in column one.

#### OTHER PARTS OF THE STATE.

Several cases of plague having occurred in different parts of the State, and numerous invitations having been received from various centres requesting sanitary inspections and the services of an officer from the Department, I or one of my assistants have been despatched to give the required assistance; 6,300 visits of inspection have been made, in the majority of cases repeated.



## ALLORA.

As the result of a sanitary survey in the year 1902 of this municipality, orders were issued at that time by the Commissioner of Public Health for the initiation of a sanitary service and rubbish removal system. After considerable delay, the council requested that an officer of the Department should be sent to select a suitable site for their dépôt. This has been done, and I have prepared by-laws and specifications for a sanitary contract and sketch plans for the necessary buildings, as well as code of instructions for the guidance of their licensed nightman. A report on this matter has already been submitted to you.

## BUNDANBA.

Numerous complaints regarding the sanitary state of the more thickly populated parts of the shire adjacent to Ipswich having been received, the local authority was called upon by the Commissioner of Public Health to initiate a sanitary service. The assistance of the Commissioner having been requested an officer of the Department was despatched for the purpose of selecting a suitable sanitary paddock. Schedules of contract, instructions for nightmen, and plans of the buildings and plant required for the efficient working of their contract have been furnished. A sanitary service on the duplicate pan system has since been initiated.

## CLIFTON.

While making a house-to-house inspection of this township a sanitary dépôt was selected as requested by the Shire Council. Schedules of contract and plans of buildings, &c., have been prepared for their information and guidance.

## ROSEWOOD.

Repeated outbreaks of typhoid fever having taken place within this township, acting under your instructions I made an inspection of the sanitary circumstances of the town in June, 1903. The local authority was then called upon to provide a sanitary service, the matter remained in abeyance until the early part of this year when the Council requested that an inspector be sent to select a site for the proposed dépôt. There are very few places available for this purpose unless the council purchases a site. However, a piece of land adjacent to the township adapted for the disintergration of nightsoil was recommended. Plans, specifications of contract, and instructions for their guidance have been forwarded to the Shire Council, but I am not aware if any further steps have been taken to carry out the instructions of the Commissioner of Public Health. Reports on this matter have already been submitted.

## ROCKHAMPTON.

There was a recrudescence of plague here in March. Departmental action was taken to have the town thoroughly cleansed. Accompanied by Inspector Daniel I proceeded to Rockhampton to supervise the work under the direction of the local Health Officer. A house-to-house inspection was undertaken in conjunction with the inspectors of the local authority, who co-operated with the Health Department, with the result that the city has been thoroughly cleansed. It is pleasing to find that some local authorities work in harmony with the Health Department, and see the necessity of carrying out the requests of the Commissioner of Public Health. This has been the subject of a special report.

## ST. GEORGE.

For years past recurring outbreaks of typhoid fever have taken place in this township. The local authority, becoming thoroughly alarmed, appealed to the Premier for assistance. The matter, on being referred to the Department, Inspector Munro was despatched, during my absence at Rockhampton, to investigate the sanitary circumstances of the town. A number of recommendations have been made, which, if given effect to, will remove the cause of these outbreaks of fever. The local authority have taken steps to initiate a rubbish removal system and sanitary service. All the necessary information has been supplied by the Department for the guidance of the council in drawing up their specification of contract. It is pleasing to mention that the council sent their Shire Clerk to Brisbane to confer with the Commissioner of Public Health as to the best methods of disinfection and the appliances necessary. A special report on St. George has already been submitted by Inspector Munro.

## TOWNSVILLE.

Plague having recurred at Townsville, an officer of the Department was sent to assist in combating the outbreak; 980 premises were inspected. The shipping regulations were enforced, and a crusade of rat destruction vigorously prosecuted. Large quantities of old bottles packed with straw in bags and bales at this time were being sent to Brisbane. The inspector drawing the Commissioner's attention to this traffic, orders were issued by the Commissioner to have all these packages thoroughly cyanided in a chamber for this purpose, situated on the wharves at Brisbane, before delivery of the goods was allowed.

I have, &c.,

JOHN SIMPSON, Memb. Royal San. Inst., Gt. Brit., Chief Inspector.

The Commissioner of Public Health, Brisbane.



## APPENDIX B.

## REPORT OF THE GOVERNMENT BACTERIOLOGIST.

SIR,—I have the honour to submit my Annual Report of the work conducted at the Bacteriological Institute during the year ending 30th June, 1906.

In the cases of typhoid and diphtheria specimens—in fact, in all urgent cases—the result of the examination, in addition to the official report, is given per telephone or collect telegram, as the case may be.

In many instances the information is supplied within one or more hours after the receipt of the specimen, which, to the medical attendant, and more particularly the patient, is of the very greatest importance, especially if they reside in the suburbs or a country district.

Apart from the general routine work of examining bacteriological and pathological specimens, some considerable time has been devoted to carrying out original investigations, in connection with which several progress reports have been submitted, and others are in course of preparation.

The total number of specimens received was 17,062. While there was a decrease in the number of rats and mice submitted, there was a considerable increase in the other kinds of specimens, which invariably take longer to examine. These latter include various human and animal diseases, internal and external parasites; samples of water, milk, meat, disinfectants, &c. The details will be found on Appendix A.

## OFFICE WORK AND CORRESPONDENCE.

The correspondence received consisted of 448 letters and telegrams accompanying specimens asking for special information, or applying for pleuro virus.

The outward correspondence, consisting of letters, telegrams, reports, &c., numbered 1,796.

A considerable amount of time has been taken up in supplying verbal information to medical men, stockowners, and others, for various human and animal diseases.

## MONEY COLLECTED.

The sums collected as fees for the examination of specimens, for supplies of pleuro virus, &c., amounted to £84 8s. 5d. The details will be found on Appendix C.

## GENERAL PATHOLOGICAL SPECIMENS.

The number of specimens of suspected malignant nature amounted to 101. The preparation of these specimens for examination involves a considerable amount of time and labour.

The material from each case has to be cut into small pieces and hardened, in varying strengths of formaldehyde and alcohol, and then passed through several bottles of cedar oil and melted paraffin wax. In the latter it is embedded, and then cut into ribbon sections, after which the paraffin is removed. It is then stained and mounted. The sections are then handed over for examination to Dr. Wilton Love, the Honorary Pathologist to the Health Department.

The diagnoses of the various specimens are embraced in the following list:—*Epithelioma*, *Carcinoma*, *Scirrhus-Carcinoma*, *Adeno-Carcinoma*, *Adenoma*, *Papillary Adenoma*, *Papilloma*, *Fibroma*, *Fasciculated Fibroma*, *Fibro-myoma*, *Fibro-myxoma*, *Chronic Mastitis*, *Sarcoma* (spindle celled, large round celled, *myeloid*, *melanotic*, and *alveolar*), *Tubercular Adenitis*, and *Granulation tissue*.

## GENERAL.

A large number of requests have been made for microscopic preparations showing the characters of various kinds of bacilli, notably plague, leprosy, tubercle; pyrogenic organisms, &c.

Some of these specimens have been forwarded to the other States, and to various scientific institutions in England, the Continent, and America. Several Health and Government Medical Officers have been supplied with tubes of culture media, micro-stains, and reagents.

## MISCELLANEOUS.

Among other specimens of a miscellaneous character submitted, the following may be mentioned:—Pneumonia, actinomycosis, empyema, endocarditis, pseudo-tuberculosis, anthrax, gonorrhoea, tick-fever, hydatids, and abscess; also specimens of urine to be tested for albumen, sugar, blood, and chyle.

## MUSEUM.

The museum collection has been considerably increased through the addition of many valuable and interesting pathological specimens, animal parasites, &c. Several members of the medical profession have presented some unique preparations from operations, and in each case I have preserved them by the formalin-glycerine process, which shows them to the best advantage in their natural colours.

## LECTURES.

For the purpose of facilitating the methods of diagnosis of certain notable diseases I have during the year delivered a number of lectures, illustrating the same in a popular manner by lantern photographs, charts, diagrams, &c., upon such subjects as, infectious diseases and their prevention, germ life, disinfection, food preservation, tuberculosis, tick fever, animal parasites, susceptibility and immunity, &c.



## STAFF.

I have again to record my obligation to the whole of my staff, each one of which has rendered valuable assistance in his particular branch of work.

Mr. Beardmore has been most assiduous in his work of cutting and preparing pathological sections, and examining suspected typhoid and diphtheria material; while Mr. Thorn, in a like manner, has assisted in the examination of some thousands of rats and other animals for plague, and the preparation and standardising of large quantities of nutrient media.

Mr. Kelly has taken charge of the clerical work in place of Mr. MacGinley, who has been granted special leave of absence.

Owing to the increasing work it will be necessary to engage the services of at least two junior laboratory assistants.

## PLAGUE.

There has been a slight decrease in the number of rats and mice received for examination, which may probably be accounted for by the continued use and general distribution of baits infected with virulent Danysz' bacilli. The number of rats and mice examined was 13,331 and 2,308 respectively, of which only 38 rats were found infected.

The mode of procedure is to dissect out the pharyngeal, laryngeal, axillary, and inguinal glands; then open up the abdominal and thoracic cavities and examine the spleen, liver, mesenteric glands, heart, and lungs. Should there be any *post mortem* appearances of plague present, cover-glass smears are taken from the suspected animal, then stained and examined microscopically. Should there be an abundance of typical bipolar bacilli, coupled with characteristic *post mortem* appearances, the case is at once reported; but where there are only a few bipolar bacilli and the *post mortem* appearances not too distinct, the report is held over until some further information is obtained through the inoculation of culture media and a guinea-pig.

With regard to suspected human cases of plague, specimens of lymph, sputum, and viscera from thirty-nine cases were examined by the various crucial tests employed. Eleven proved positive.

The following table shows particulars of rats and mice examined since the first outbreak:—

Year.	Rats		Mice.	
	Number.	Number Infected.	Number.	Number Infected.
1900	802	95		
1901	1,813	102		
1902	3,926	57	8	2
1903	14,439	84	168	3
1904	20,730	401	4,922	3
1905	14,782	140	3,662	1
To 30th June, 1906	7,393	29	1,101	...

The following table shows the particulars of the examination of human specimens for plague since the first outbreak:—

Year.	Positive.	Negative.	Total.
1900	52	60	112
1901	40	31	71
1902	75	47	122
1903	24	40	64
1904	37	36	73
1905	38	60	98
To 30th June, 1906	8	18	26

## TUBERCULOSIS.

The work of diagnosing material from this disease entails the examination of a large and varied number of specimens.

*Sputum*.—Of 459 specimens of expectoration examined, 160 contained tubercle bacilli.

*Urine*.—Of five samples submitted, three were positive. In these cases, owing to the presence of other acid-fast bacilli (the *Bac. Smegma*), microscopical examinations alone cannot be relied upon, consequently the respective centrifugalised deposits of each sample was injected into a guinea-pig, and in due course three of the animals became tubercular; thus proving the accuracy of this method of diagnosis.

A large proportion of the suspected tuberculosis specimens came from the General and other Hospitals, and from the Dunwich and Dalby sanatoria.

The following table shows the particulars of human specimens examined for tubercle bacilli during the past six years :—

Year.										Positive.	Negative.	Total.
1900	...	...	...	...	...	...	...	...	...	72	122	194
1901	...	...	...	...	...	...	...	...	...	118	210	328
1902	...	...	...	...	...	...	...	...	...	99	184	283
1903	...	...	...	...	...	...	...	...	...	137	188	325
1904	...	...	...	...	...	...	...	...	...	104	200	304
1905	...	...	...	...	...	...	...	...	...	160	266	426

#### TYPHOID.

The appreciation of Widal's test for typhoid is made readily apparent by the large number of blood specimens submitted by the General and Children's Hospitals, and town and country medical practitioners.

The results of several years' daily observation show that blood sent in capillary tubes is of little value, more especially during the summer months, owing to the great risks of contamination. The most satisfactory method is to smear a little blood from the patient's ear on a clean piece of notepaper. The name, age, sex, and duration of illness should always be given. This latter is most essential, for, as a rule, a reaction does not take place in genuine typhoid cases earlier than the commencement of the second week of illness; therefore, it is most advisable to submit specimens that are taken after the seventh day.

The following table is a summary of the specimens examined for Widal's test during the past six years :—

Year.										Positive.	Negative.	Total.
1900	...	...	...	...	...	...	...	...	...	93	88	181
1901	...	...	...	...	...	...	...	...	...	178	264	442
1902	...	...	...	...	...	...	...	...	...	262	383	645
1903	...	...	...	...	...	...	...	...	...	399	406	805
1904	...	...	...	...	...	...	...	...	...	229	369	598
1905	...	...	...	...	...	...	...	...	...	138	262	400

#### DIPHTHERIA.

Of 199 specimens from suspected cases, mostly from the Children's Hospital, typical Klebs-Löffler bacilli were detected in sixty-five.

Specimens continue to be received even after convalescence, and the patient is not discharged until our report shows diphtheria bacilli to be absent.

The following is a tabular summary of suspected diphtheria specimens examined during the past six years :—

Year.										Positive.	Negative.	Total.
1900	...	...	...	...	...	...	...	...	...	6	6	12
1901	...	...	...	...	...	...	...	...	...	10	10	20
1902	...	...	...	...	...	...	...	...	...	7	13	20
1903	...	...	...	...	...	...	...	...	...	8	18	26
1904	...	...	...	...	...	...	...	...	...	101	104	205
1905	...	...	...	...	...	...	...	...	...	46	90	136

#### LEPROSY.

Specimens of serum, blood, and tissue from twenty-four suspected cases were examined bacteriologically. Of this number, seventeen were found to contain the bacilli of leprosy growing characteristically in the form of groups or colonies within the tissue cells.

#### LEPROLIN

In July last I commenced an investigation on the lines laid down by Dr. Rost, who had previously announced that he had succeeded in cultivating the bacilli of leprosy, and who had, further, from these cultures, prepared a material called Leprolin, which was alleged to possess curative properties when injected into patients afflicted with leprosy.

I prepared large quantities in sterile tubes and flasks of the special media from beef broth, in accordance with Dr. Rost's formulæ. I spent some time at the Stradbroke Island Lazarette inoculating these cultures from several of the leper patients. The culture media was then placed in the incubator, watched and examined for over six months, but I could find no evidence of development from the leprosy bacilli which were placed in the media.



It is of interest to note that soon after my experiments, news came to hand that Colonel Semple, working in co-operation with Dr. Rost, found that as a result of exhaustive investigations there could be no preparation of Leprolin, and that rumours concerning the discovery and preparation of Leprolin were not confirmed on further experiments being made. A progress report on this work was submitted in October last.

Some years ago I conducted a very lengthy investigation in the possible cultivation of the leprosy organism. I prepared large quantities of various kinds of nutrient media, each one containing a different percentage of the salts of serum. This was subsequently rendered sterile and inoculated direct with serum taken from a cutaneous leprosy nodule.

I propose, as opportunity affords, to further pursue these investigations.

#### SUPPLY OF PLEURO-PNEUMONIA VIRUS.

Pleuro-pneumonia is not nearly so prevalent a disease, nor are the outbreaks so frequent now, as some twelve to fifteen years ago. Nevertheless stockowners are keenly alive to the fact that it is a wise plan to have their cattle (especially when travelling long distances) protected against this highly contagious disease. It is in this matter that the Institute renders special aid in the supply of pleuro virus, guaranteed, as far as modern bacteriological methods will allow, free from tuberculosis, actinomycosis, and other animal ailments.

During the past year 235 applications were received from persons throughout this and the neighbouring States for virus to inoculate 31,930 head of cattle, but, owing to the difficulty experienced in obtaining supplies, only sufficient virus to treat 27,300 head could be supplied.

A great many stockowners and drovers are able to obtain local supplies, in which cases I always recommend that a small sample be forwarded to the Institute for examination, and in a great many cases this method is adopted.

This branch of the work, which is invaluable to the stockowners, the Department of Agriculture, and the State generally, has been largely responsible for the prevention and wholesale spread of bovine tuberculosis, which was, prior to the establishment of the Institute, brought about through the indiscriminate inoculation of pleuro virus taken from an animal affected with generalised tuberculosis in a breaking down caseating condition. As there is no restriction as to what a person shall use for inoculation purposes, there can be no doubt that exceptional cases do occur where tuberculosis is induced by this method.

#### WATER AND FOOD EXAMINATIONS.

Samples of water, milk, food, &c., were received from officers of the Health Department, Government medical officers, local authorities, and others.

In thirty samples of water for quantitative and qualitative bacteriological examination, three were found to contain typhoid and coli bacilli, while twelve contained coli organisms alone.

Several delicate tests have been recently introduced for the ready detection of the Bacilli C.C. and other gas-producing organisms, and also for the diagnosis of the typhoid bacilli. While the detection of typhoid bacilli is always attended with great difficulty, that of the coli is less so, principally on account of the ready way it produces gas (when cultivated on special media), a product which has not been observed in cultures of typhoid bac.

The bacilli coli is distinctly a sewage organism, and the importance of its detection in water is an evidence of sewage pollution.

Most authorities are now agreed that chemistry is powerless to detect pollution by pathogenic bacteria, or by the small amount of bacteria which can be detected by bacteriology, which is 10 to 100 times less than that detectable by chemistry.

#### BRINE.

In six samples examined, some were found greatly contaminated with foul odour-producing organisms, while in one sample a very large number of bacilli coli were present.

#### MILK.

Several of the fourteen samples received were found to be very much contaminated with extraneous organisms, but in no instance were tubercle bacilli detected.

#### TINNED SALMON.

Several families were alleged to have suffered from ptomaine poisoning through eating a certain brand of tinned salmon, which, on examination, was all that could be desired in flavour, colour, and odour, and perfectly sterile; yet on bacteriological examination was found to be simply a mass of micro-organisms. A noticeable feature of every tin of this particular brand of salmon was, that instead of having one blowhole only, it had two, each covered with a piece of solder. Apparently what had happened was that the tins were filled with salmon, imperfectly sterilised, and then soldered down. In due course, instead of the ends remaining concave, they became convex; due to the generation of gas from the micro-organisms developing after the imperfect heating process. They were pierced near the first blowhole, the ends pressed in, thoroughly sterilised, the blowhole sealed, the tin neatly varnished, covered with an attractive label, and finally placed on the market as something very choice at an absurdly low price.

Although it may not be a golden rule that the fish or meat contents of a tin having two drops of hot solder placed on its end are decomposed, I strongly warn anyone to be extremely suspicious about eating preserved foods taken from a hermetically sealed tin that has two blowholes, for I have found a similar condition in tins of potted meats, sardines, and fruit preserves.



## DENGUE FEVER.

In July 1905, I submitted a progress report on the investigations in connection with the then prevailing epidemic of dengue fever. Specimens of blood, nasal mucus, and swabbings from the tongue and throat of forty-eight patients were examined, and controls were made from healthy persons from Sydney and Dunwich, at which places the affection had not made its appearance. The specimens were treated by various staining reagents and examined microscopically. Cultivation was tried under aerobic and anaerobic conditions, and animals were inoculated with the different micro-organisms that were isolated.

As might be expected, the material from some of these sources contained a large variety of micro-organisms, including mucor, penicillum, yeasts, bacilli, and cocci. One organism (a small polymorphic bacilli) was found constant in eleven cases of nasal mucus, but not in the blood; dengue being a disease apparently peculiar to the human subject, the evidence from the animal experiments failed to prove that the bacillus was the sole exciting cause of the disease.

## TESTING VARIOUS DISINFECTANTS.

On the 26th March last I furnished a report on the results of a large number of experiments, conducted to determine the germicidal value and carbolic coefficient of different disinfectants.

Over 100 series of experiments, involving 1,500 separate tests, were carried out.

The following is a list of the various articles experimented with:—Three kinds of carbolic acid crystals, Cyllin medical, Cyllin disinfectant, Alfazone Kreso, Lysol, Mycol, McDougall's No. 9 and 10 crude carbolic acid, Little's fluid.

## EXPERIMENTS WITH CULTURES OF BACILLI FOR RAT DESTRUCTION.

A number of cultures of rat virus (Danysz) was obtained in May, 1905, and a similar consignment (Laroche) a few months later.

The results of the examination showed that with the Laroche cultures several were dead, while the remainder did not possess any virulent properties. Mice and rats of different ages were experimented upon, some being fed and others inoculated without producing any symptoms of sickness whatever. With the Danysz virus, however, it was found that of the rats and mice fed or inoculated with a small quantity of the original cultures, many died in from seven to twenty days.

Since that date, for the past ten months I have kept this organism growing in various kinds of artificial culture media, and, in order to maintain a high standard of virulence, it has been passed through the bodies of a large number of susceptible rats and mice by means of feeding and subcutaneous inoculation.

Between 16th February and 30th June, Dr. T. Bancroft, the late Health Officer, was supplied bi-weekly with stocks of young, active, and virulent broth and Agar cultures of Danysz bacilli; the total amount being 1,521 oz. of bouillon culture, and 633 petrie dishes of Agar culture. This material was mixed with specially prepared baits for the destruction of rats in and around Brisbane, and, judging the control observation on rats and mice kept at the Institute, the results should have been eminently successful.

In addition, considerable quantities of this virus have been despatched to Rockhampton since the recent outbreak of plague there.

In studying the biology of this organism, I came to the conclusion that it was precisely the same as Loeffler's bacillus Typhi Murium, one which I had some considerable experience with in connection with the destruction of flying foxes during the years 1897-8.

On the fact that this bacillus is extremely motile, it was presumed some information might be gained as to its work among the Brisbane rats by applying the agglutination test on the blood of rats that are daily received for plague examination. By this test many were found to re-act; but, as so many rats are received in a partially decomposed condition, the test was only applicable to a limited number. Moreover, the time and trouble required to conduct even some twenty tests placed the method at a disadvantage when several hundred rats were received for examination in one day.

## EXPERIMENTS WITH RATS.

In twenty-three experiments on eighty rats, which were fed either upon portions of the bodies of animals that had died from eating Danysz virus or cultures of the organism, fifty-three, or 66 per cent., died of the disease.

Of twelve rats inoculated with Danysz virus, eleven died of the disease. Of three contacts placed in a jar with several inoculated rats, two died of the disease; the other one remaining alive showing no signs of sickness.

## EXPERIMENTS WITH MICE.

Of five mice fed with Danysz bacilli only two died of the disease. Of twenty-one mice inoculated with the same material all died within the prescribed time. *Post mortem* and microscopical examinations proved that every animal had died from the effects of the virus.

Only one mouse was placed in the same jar as an inoculated one, and both died of the disease.

## EXPERIMENTS ON GUINEA-PIGS.

Four guinea-pigs were inoculated with virulent Danysz virus, but all remained unaffected. Two were fed with the same result.



## EXPERIMENTS ON OTHER ANIMALS.

Seven rabbits inoculated and two fed with the virus remained alive without showing any symptoms of sickness. Similar results were obtained from experiments on pigeons, ducks, and fowls.

## CONCLUSION.

From these observations there can be no doubt this method of destroying rats and mice must be considered as highly satisfactory, so long as the virus supplied is maintained at a high standard of virulence. Moreover, its continued use, in combination with other schemes for the destruction of the vermin—such as trapping and poisoning—is to be recommended.

I have, &c.,

C. J. POUND,

Government Bacteriologist.

The Commissioner of Public Health, Brisbane.

## APPENDIX C.

## REPORT OF THE GOVERNMENT ANALYST.

Government Chemical Laboratory,  
Brisbane, 27th August, 1906.

SIR,—I have the honour to submit the following report of the work done in the Government Chemical Laboratory for your Department during the year 1905:—

No samples were received under the Health Act, other than those from your officers, so that no fees were paid to the Government Analyst's collection account in connection with this Act.

As all samples have already been reported to you in detail, a summary of the results is all that will now be necessary.

In all, 202 samples of food have been examined.

The greater portion of the samples were those of cream of tartar, every shipment of which is tested. Out of 122 samples analysed, thirty-one failed to come up to the requisite 95 per cent. of Hydrogen Potassium Tartrate, but nearly all of these thirty-one were between 94 and 95 per cent. There was only one really poor sample, 83·5 per cent., and it is evidence of the great improvement in the cream of tartar supply that this 83·5 per cent. would, before the Health Act of 1900 was passed, have been considered of fair quality. The average composition of the whole 122 samples is slightly over 95 per cent. Hydrogen Potassium Tartrate, while of the samples passed it is nearly 96 per cent.

Of nine samples of tea submitted through the Customs Department as of suspicious quality, eight were found to pass and one was stopped for containing "lie tea."

Only six samples of milk were submitted for analysis. One sample was not adulterated, one contained 56 grains and another 80 grains of boric acid per gallon, while the three others contained respectively 10 per cent., 16 per cent., and 20 per cent. of added water. One sample each of condensed milk, "evaporated cream" (which is the trade term for unsweetened condensed milk), and dried milk were found to be of normal composition. One sample of mustard out of four examined was found to be genuine, the other three contained starch and were coloured with turmeric.

One sample of pepper out of six examined was found genuine. The other five samples contained respectively 1·5 per cent., 3 per cent., 3 per cent., 6 per cent., and 20 per cent. of sand.

Five samples of "custard powder" were examined. They had all the same composition, being maize starch, flavoured with a little vanilla, and coloured with coal tar dye. Two samples of bottled peas contained respectively 0·58 and 0·66 grains of copper per pound.

Three samples of essences were in accordance with the labels.

Two samples of salad oil were examined; one was found to be olive oil, the other cotton-seed oil.

Two samples of table jellies were found to have the usual composition of glucose, cane sugar, a little gelatine and flavouring, and were coloured with coal tar dyes.

Three samples of cordials were found to be genuine.

In addition to the above, seven samples of water were reported upon, and twenty samples of miscellaneous character were analysed, such as tobacco, hop beer, vinegar, sulphur, fish paste, &c.

Seven samples of carbolic disinfectants were examined, and five were found good; the remaining two contained only 2·5 per cent. of phenols.

I have, &c.,

J. BROWNLIE HENDERSON,

Government Analyst.

The Commissioner of Public Health, Brisbane.



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